Amendment to the Specification

In the Specification:

Please amend the specification as follows:

On Page 1, the section heading and paragraph beginning at line 3 should be replaced in its entirety with the following:

Related Applications

This application is a divisional application of U.S. Patent Application Serial No. 10/355,653, filed on January 29, 2003, (issued as U.S. Patent No. 6,707,551), which itself is a divisional application of U.S. Patent Application Serial No. 09/689,172, filed on October 12, 2000 (issued as U.S. Patent No. 6,580,504), which itself is a continuation-in-part of U.S. Patent Application Serial No. 09/490,478, filed on January 24, 2000 (issued as U.S. Patent No. 6,249,341), which itself is a conventional application based on prior Provisional Patent Application Serial No. 60/117,203 filed on January 25, 1999, the benefits of the filing dates of which are hereby claimed under 35 U.S.C. §§ 119(e) and 120.

On Page 13, the paragraph beginning at line 1 and ending at line 32 should be replaced with the following (note that the full text of the replacement paragraph is shown with markings to show all the changes relative to the previous version of the paragraph, with the text of any added subject matter shown by underlining the added text, and the text of any deleted matter shown by strike-through):

In addition to the factors that cause beam overlap noted above, beam overlap can occur as a result of a divergence of the beam as it traverses the cavity. Divergence due to diffraction causes the cross-sectional area of the beam to increase as the beam traverses the cavity. As the traversal distance increases, a concomitant increase in cross-sectional beam area, or beam spread occurs. This increase in beam spread decreases the intensity, or photon flux at any given portion in the cross section of the beam, which in turn, reduces the probability of fluorescence excitation of probe molecules. Therefore, the beam spread must be kept within acceptable limits. In accord with the embodiments of the present invention discussed above, the beam waist, i.e., the point of the smallest cross-sectional area of the beam, is preferably at a midpoint of the beam traversal through the cavity.

LAW OFFICES OF RONALD M. ANDERSON
600 - 108th Avenue N.E., Suite 507
Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314

The beam cross-sectional size increases in either direction away from the waist at a rate that is inversely proportional to the size of the waist. This phenomenon is illustrated in FIGURE 11, which shows the spread of two beams over five passes across the center of a 5 mm wide cavity, one beam having a 50 micron waist (line ~~143~~ 141 with triangles at data points) and the other an 80 micron waist (line ~~141~~ 143 with squares at data points). Even though a 50 micron waist is substantially smaller in diameter than an 80 micron waist, the average beam diameter throughout the entire traversal of the 50 micron beam is larger. Those skilled in the art will appreciate that in view of the beam divergence, the waist size may be chosen appropriately to maximize intensity based on the number of cavity traversals and the acceptable beam size at points away from the waist, or in regard to the average beam size within the cavity. Those skilled in the art will also appreciate that the beam waist may be disposed appropriately within or outside the cavity to achieve a desired effect with the present invention.

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Bellevue, Washington 98004
Telephone: (425) 688-8816 Fax: (425) 646-6314